

1991 — A Year of Comparison

IPSC

Production Incentive Program — IPSC employees earned 86 percent of targeted goals, for an award of 4.3 percent of their annual base wage which was higher than last year's award.

PMA Assessment — Power Management Associates (PMA) conducted an assessment of IPSC's operation and management of the Project. This same group would return to do an additional evaluation in 1996. A copy of PMA's 1991 Executive Summary is contained in Exhibit #7.

Community Center — In May the contract with Ogden/Burtco was dropped. The new contract for the operation of the community center was signed with ABC Services.

Maintenance Effectiveness — The "Monthly Maintenance Indices Report" was expanded to include cost center list of high-cost items.

Document Storage at IPSC — By 1991 a master plan had been developed to meet the needs of records management at IPSC. A Records Retention Schedule (PAI #77) was developed and records management policies were adopted. The plan was developed utilizing electronic imaging technology and optical storage as the backbone of the system. Implementation would begin in 1992.

Baghouse Modifications — A test system was installed during 1991 and the sonic horns were shown to be effective in reducing pressure drop.

Burner Thermal Redesign — Following the changes and modifications suggested from the 1990 in-depth analysis, the necessary hardware was installed on Unit 1. Since these modifications, Unit 1 Burner hardware integrity has met all expectations. In addition, testing of burner operating parameters resulted in improved combustion and air flow distribution.

Turbine Hydraulic Coupling — General Electric and IPSC engineers, following the 1991 fall turbine outage, concluded turbine pedestal shifts due to uneven temperature differential across the pedestal would negatively effect future turbine rotor alignments. Faced with the threat of delayed outages caused by extended turbine rotor alignments, IPSC engineers investigated hydraulic coupling bolts as a quicker, yet equally reliable substitute to standard coupling bolts. The hydraulic coupling bolt is designed to be slightly more forgiving in the fit tolerances and permit a quicker assembly.

This arrangement sped the coupling and alignment process by moving the time intensive work of precision machining the bore and sleeves earlier in the outage and not at the end when any delay would have a direct impact on the unit returning to service.

ID Fan Transformer Failures, Evaluation, and Replacement — The Induced Draft (ID) fans are driven by synchronous motors powered by variable frequency drives. There are eight variable frequency drives in each unit to drive the four ID fans. Each variable frequency

drive is connected to 6900 volt switchgear through isolation transformers to provide harmonic isolation and to provide proper voltage levels to the drives.

The Unit 1 B2 Isolation Transformer failed when one of the low-voltage leads shorted to the transformer core. An inspection of the remaining 15 transformers showed excessive heating was occurring in all of the transformers. The abnormally high temperatures in the transformers caused the varnish on the core steel to burn off and damaged the paper insulation on the leads. The damage to the lead insulation on the B2 Transformer caused the lead to fail and resulted in the loss of the entire transformer.

The transformer operating performance was analyzed and it was determined the heat was being caused by high harmonic levels in the transformer core steel. New design specifications were prepared for the replacement transformer which required the core steel to be able to handle higher levels of harmonics without overheating. The replacement transformers operated at a significantly lower temperature than the original transformers. In addition, the room HVAC System was modified to increase the heat removal from the original transformers to prolong their life.

Predictive Maintenance — In 1991, monthly performance testing began on both units. The data would be used to trend and determine degradation of the turbine cycle, and to determine problems with cycle isolation. The steam generation side was also reviewed for problems. Performance testing would enable equipment to be scheduled for reconditioning when needed, instead of at specific time intervals.

Pulverizer Rotation Throat — Pulverizer maintenance cost reductions and performance benefits were the most common gains reported by generating stations having mills with rotating throats.

Due to the internal configuration, the air flow distributions around stationary throat rings could vary by as much as 25 percent. Accelerated wear and localized erosion on the throat and housing are often found on the stationary throats, especially in throats adjacent to and behind the roll wheel assemblies.

The aerodynamics of the rotating throat promotes more uniform air flow, thus minimizing the erosive wear in the low velocity throat ports and in the high velocity housing zones. In addition, wear is further reduced by the use of erosion resistant materials.

Anticipating the benefits of the rotating throat design, IPSC began to test rotating throats designed by various vendors. The Babcock and Wilcox design proved to be the most promising with higher gradation, better mechanical reliability, and extended service life. However, throat performance seemed to be more sensitive to fuel that had high rock content. Increasing the primary air duct pressure when there would be a high amount of rock in the coal helped maintain pulverizer reliability. Evaluation continued on the throat pros and cons to ensure optimum operation, performance, and maintenance savings.

Water Suits Settled — During the high water runoff in 1983 and 1984, a small portion of land was flooded above the legal storage easements at the Sevier Bridge Reservoir. Twenty-five individuals who owned land which was flooded sued all parties involved with the reservoir including IPA. A settlement was reached with all of the plaintiffs, except one.

Number of Employees — By the end of the year, the number of employees was 605.

IPA

Financing — June 30, the current weighted average borrowing cost was 8.05 percent.

IPA Acquires 50 Percent Interest in Crandall Canyon Project — In the summer of 1991, IPA became Nevada Power's co-owner in the Crandall Canyon Project. Under the terms of this acquisition, IPA can take varying amounts of coal from the Crandall Canyon Mine (also known as the Genwal Mine) at prices based on the actual cost of production. This low-cost supply was intended to give IPA a producer's view of the coal markets, useful in dealing with other coal producers in contract negotiations and spot market purchases.

Other

Pozzolan on Site — A contract with Pozzolan International was signed for the purchase of flyash. They would purchase most, and maybe all, of the flyash that met the quality requirement for an additive in cement. IPSC was producing about 325,000 tons annually of which about half met quality requirements. Pozzolan built their own classifying, storage, and load facilities near the Sludge Conditioning Building.

